

Measuring Compost Maturity Using 1L Thermos

1. Take a representative sample of the compost you are testing for maturity. This sample should be compiled from at least 5 locations in the pile, taken from a depth of 45-50 cm (18-24").
2. Screen the sample using a 6-10 mm screen (1/4" to 3/8").
3. Measure the moisture content of the sample. If the moisture content is between 40-55%, skip to step 5. If the moisture content is below 40%^a, it is important to add water to reach 45%^b using the following formula:

$$\text{Water (g)} = \text{Compost (g)} \times \frac{\text{Moisture Goal (\%)} - \text{Moisture (\%)}}{100\% - \text{Moisture Goal (\%)}}$$

Example: Compost is 35% moisture. Add water to 1000 g of compost

$$\text{Water (g)} = 1000 \times \frac{45\% - 35\%}{100\% - 45\%} = 1000 \times \frac{10}{55} = 182 \text{ g water}$$

4. Blend the water thoroughly into the compost.
5. Loosely cover the sample as shown and allow it to equilibrate in an 18-22 °C (64-72 F) environment for approximately 24 hours. This allows the microbes to adjust to ambient temperature for the test.
6. Fill a 1 L (1 quart) Thermos^c carefully with the compost. Gently tap the Thermos when full to allow the compost to settle, then fill again to the top.
7. Insert a 12" (30 cm) thermometer so that the tip of the stem is 3-5 cm (1-2") from bottom of the Thermos^d. You can also use a digital min/max thermometer as shown^e.
8. Place Thermos in an 18-22 °C (64-72 F) environment. Record ambient temperature and temperature of the compost daily for up to 5 days.
9. If after 5 days the compost temperature is less than 5 °C above ambient temperature, the compost is mature^f.



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- a. The TMECC Dewar methodology suggests adjusting moisture to 70-85% of water holding capacity but acknowledges that this is usually between 40-50% moisture content. Measuring water holding capacity is a bit more complicated than measuring moisture content.
- b. Recommended moisture content for maturity testing is 40-55%. When adjusting moisture, wet to 45%, as it takes time for the water to be absorbed into the particles. The surface of the particles where the microbes are will be sufficiently wetted.
- c. We have found that other leading brands of containers are not effective – it needs to be the Thermos brand.
- d. A wrap of electrical tape around the stem of the thermometer helps identify the appropriate depth of insertion.
- e. The probe of the max/min thermometer can be taped to the 30 cm (12”) temperature probe.



- f. The temperature increase with the Dewar test suggests that a temperature rise more than 10 C above ambient constitutes mature compost. Our experience suggests that compost is not mature if the temperature is greater than 5 C above ambient. We accept that there are different definitions of maturity.

Table 1: Dewar Self-Heating Increments, Rating and Description of Stability Classification Based on the European System

Temperature Rise Above Ambient in C	Official Class of Stability	Descriptors of Class or Group	Major Group
0 --10 ^o	V	Very stable, well-aged compost	Finished Compost
10 --20 ^o	IV	Moderately stable; curing compost	
20 --30 ^o	III	Material still decomposing; active compost	Active Compost
30 --40 ^o	II	Immature, young or very active compost	
40 -50 ^o (or more)	I	Fresh, raw compost, just mixed ingredients	Fresh Compost